

REMARKS

Claims 21, 24, 27, 30, 49, 50 and 63 - 66 have been amended to recite positively that the claimed recording medium is an *initialized* rewritable phase-change optical recording medium. This added recital is supported by the disclosure of the original specification, e.g. at paragraphs [0150]-[0163] of application publication No. 2003/0043712 (Pub. No. '712), which describe the initialization process; a medium which has been subjected to this process is an initialized medium (see also paragraphs [0131] and [0167] of Pub. No. '712). Further, in accordance with the Examiner's helpful suggestion at p. 4 of the aforementioned Office Action, claims 51 and 58 have been amended to recite that the recording medium has a capability of at least 3000 overwrite cycles, as supported by the original disclosure at paragraph [0194] of Pub. No. '712. A minor correction has been made in claim 47. Since this Amendment does not increase either the total number of claims or the number of independent claims, no additional fee is necessary.

Claims 21 (independent), 24, 27, 30, 49 and 50 (dependent on 21), 44 (independent), 45 and 46 (dependent on 44), 47 (independent), 48 (dependent on 47), 51 (independent), 52 - 54 (dependent on 51), 58 (independent), 59 - 61 (dependent on 58), 63 (independent) and 64 - 66 (dependent on 63) are in the application. All these claims are directed to optical recording media. No claim has been allowed.

Claims 51 - 54 and 58 - 61

Claims 51 - 54 and 58 - 61 have been rejected under 35 U.S.C. §103(a) as unpatentable over Yamada et al. EP 1058249 (Yamada et al. EP '249) in view of Mizuno et al. EP 1047056 (Mizuno et al. EP '056), and also as unpatentable over Yamada et al. EP 0717404 (Yamada et al. EP '404) or Ide et al. EP 0735158 ("Yamada et al. EP '158") in view of Yamada et al. EP '249 and Mizuno et al. EP '056.

The Office Action (at p. 4), referring to the rejection of these claims on Yamada et al. EP '249 in view of Mizuno et al. EP '056, states that

“The examiner believes that if the applicant were to include a minimum number of rewrite cycles (ie 3000) into the claims, this rejection and the rejection below based upon the same references would be obviated. (see [0194] of instant prepub). The examiner notes that Yamada et al. EP 1058249 teaches 1000 overwrites and that there is overlap in the 9 and 10 m/s range.”

As understood, “the rejection below” means the rejection of the same claims (51 - 54 and 58 - 61) as unpatentable over Yamada et al. EP '404 or Yamada et al. EP '158 in view of Yamada et al. EP '249 and Mizuno et al. EP '056.

By the present Amendment, as noted above, claims 51 and 58 have been expressly limited to a recording medium that “has a capability of at least 3000 overwrite cycles.” In view of the statement just quoted, it is submitted that this added recital distinguishes claims 51 and 58 patentably over Yamada et al. EP '249 in view of Mizuno et al. EP '056, and also over Yamada et al. EP '404 or Yamada et al. EP '158 in view of Yamada et al. EP '249 and Mizuno et al. EP '056. Claims 52 - 54, dependent on amended claim 51, and claims 59 - 61, dependent on amended claim 58, are submitted to be allowable therewith.

Claims 44 - 48

Claims 44 - 49 have been rejected under §103(a) as unpatentable over Osakabe '763 in view of Ando et al. '175 and Suzuki JP 11-134691 (Suzuki JP '691). Applicants believe that the inclusion of claim 49 in this rejection is in error, because claim 49 is dependent on claim 21. Accordingly, the rejection will be discussed as applied to claims 44 - 48, and claim 49 will be discussed below as rejected on the same ground as claim 21.

In the statement of the rejection of claims 44 - 48 in the Office Action, it is asserted (at pp. 5-6) that

“The claims do not recite that the values of S or R are stored on the medium. The applicant should insert language clearly stating this into the claims and address the issue raised by the teachings of Ando et al. '175. . . . The current language

describes selecting the values of S and R and calculating other, but does not describe where they are stored. Currently this includes both on the media and also on another drive on the computer.”

Again at p. 7, the Office Action asserts that “The applicant states that R and S values are recorded in the medium, but the claim language does not reflect this as the claims only recite the step of performing the test recording where data is necessarily written into medium.”

Applicants respectfully submit that these assertions are incorrect. Independent claim 44, on which claims 45 and 46 are dependent, recites, in pertinent part,

“A phase-change optical recording medium comprising a substrate and a recording layer, *wherein said recording layer stores information recorded in advance therein corresponding to:*

“data written as test recording runs, . . . *and*

“*S and R values* for selecting an optimum recording power, said S and R values being specified by the following:

“recorded signal amplitude, m, . . . ;

“a normalized gradient, g(P), . . . ;

“an optimum recording power, . . . wherein:

“S, is a specific number selected from the numbers in the range of 0.2 to 2.0 based on said calculated normalized gradient, g(P);

“Ps is a value of said recording power which coincides with said selected specific number, S;

“R is a specific number, based in the obtained recording power, Ps selected in the numbers in the range of 1.0 to 1.7, and

“wherein said recording power, Ps, is multiplied by said specific number, R, to obtain an optimum recording power value, P₀” (emphasis added).

Independent claim 47, on which claim 48 is dependent, recites

“A phase-change optical recording medium comprising a substrate and a recording layer, *wherein said recording layer stores information recorded in advance therein corresponding to:*

“data written as test recording runs, . . . *and*

“a P_i value corresponding to an optimum recording power, P_0 , specified by the following:

“recorded signal amplitude, m , . . . ;

“a normalized gradient, $g(P)$, . . . ;

“an optimum recording power, . . . wherein:

“ S is a specific number selected from the numbers in the range of 0.2 to 2.0 based on said calculated normalized gradient, $g(P)$;

“ P_s is a value of said recording power which coincides with said selected specific number, S ;

“wherein R is a specific number, based in the obtained recording power, P_s , selected in the numbers in the range of 1.0 to 1.7;

“wherein said recording power, P_s , is multiplied by said specific number, R , to obtain said P_i value corresponding to said optimum recording power, P_0 ” (emphasis added).

In these claims, the recital “wherein said recording layer stores information recorded in advance therein” means that the defined information is stored on the claimed medium, i.e., that the claims are limited to a medium having that defined information already stored therein. As will be clear, therefore, contrary to the contention in the Office Action, these claims do not merely require that the claimed media have “data written as test recording runs” stored therein, but positively require “data written as test recording runs” *and* S and R values or P_i values specified by S and R values which are specific numbers. These recitals are supported by the express disclosure at paragraph [0065] of Pub. No. ‘712 that “these specific numbers, S and R , may be recorded in advance on the optical recording medium, to thereby be utilized to select an optimum recording power under actual media running conditions.”

None of the references applied in the rejection of claims 44 - 48 is seen to disclose or suggest the values of R and S recited in independent claims 44 and 47 as discussed above. Since these values characterize data written into the claimed medium, as claims 44 and 47 recite, it is submitted that they are proper limitations of the medium as an article or product and as such are entitled to weight in determining the patentability of the subject matter of the claims. Further, it is submitted that in view of the absence of disclosure of the recited R and S in any of the applied references, the limitations defined by the R and S recitals in claims 44 and 47 distinguish all of claims 44 - 48 patentably over Osakabe '763, Ando et al. '175 and Suzuki JP '691 and any proper combination thereof. As for "the issue raised by the teachings of Ando et al. '175," it is understood that Ando et al. '175 is cited for the feature of embossing data, not for the particular values recorded.

Claims 21, 24, 27, 30, 49, 50 and 63 - 66

Claims 21, 24, 27, 30, 49, 50 and 63 - 66 have been rejected (like claims 51 - 54 and 58 - 61) under §103(a) as unpatentable over Yamada et al. EP '404 or Yamada et al. EP '158 in view of Yamada et al. EP '249 and Mizuno et al. EP '056.

Each of independent claims 21 and 63 recites that the claimed medium "is initialized at least by irradiating said recording medium with a scanning beam spot emitted from a high power semiconductor laser device, wherein an energy density input by said beam spot is in a range of 600 J/m² to 1000 J/m²." Claims 21 and 63, and all the claims dependent thereon, have been amended to set forth that the claimed medium is an *initialized* medium. Applicants' specification (paragraph [0131] of Pub. No. '712) explains that "The process of the initialization has a considerable effect" on properties of the initialized medium. Paragraphs [0156]-[0157] and [0162]-[0163] of Pub. No. '712 specifically relate the limits of the recited energy density range to the provision of beneficial properties of the initialized medium; see also, for example, the data in TABLE 4 at paragraph [0222] of Pub. No. '712. Thus, the above-quoted recital in claims 21 and 63 is a proper recital defining properties or characteristics of the claimed initialized medium and as such is entitled to weight in determining the patentability of the claimed subject matter.

None of the references applied in the rejection of these claims is seen to disclose or suggest the recited energy density range; hence, applicants submit, no combination of them would make obvious that range or a recording medium having the resultant product properties.

The Office Action, as understood, contends (at pp. 7-9) that the properties thus defined are inherent in the disclosures of Yamada et al. EP '404 and/or Yamada et al. EP '158. Particular mention is made of overwrite data in the Examples of these two references. In this regard, however, attention is respectfully directed to applicants' specification at paragraph [0158] of Pub. No. '712, which states

“In this context, it is noted E values higher than E_{\max} [$\approx 1000 \text{ J/m}^2$] have been generally adopted previously for media initialization. For example, the E values believed used in practice are in the range of 1100 to 1400 J/m^2 in the case of CD-RW discs having linear recording velocities of 1.2 to 4.8 m/sec. The E values for the initialization as high as the present example are considered to cause the above noted deterioration in jitter during the first overwrite step, especially at high linear velocities.”

So far as appears from Yamada et al. EP '404 and Yamada et al. EP '158, the overwrite data in both were obtained at recording speeds of 5.6 m/sec or less (see, e.g., EP '404 at p. 12, line 49; EP '158 at p. 10, lines 8-9). Consequently, insofar as the two references show the attainment of satisfactory properties, it is only at low linear recording velocities; such data do not support an inference that the recording media of these references inherently possessed properties of recording characteristics (such as overwrite capability) at high linear velocities comparable to those of the initialized media defined in claims 21 and 63. As will be appreciated, overwrite capability at high linear velocities (9-30 m/sec.) is a different property from overwrite capability at the lower velocities of EP '404 and EP '158.

It is therefore further submitted that present claims 21 and 63 distinguish patentably over Yamada et al. EP '404 and Yamada et al. EP '158 in view of Yamada et al. EP '249 and Mizuno et al. EP '056.

Claims 24, 27, 30, 49 and 50, dependent on claim 21, and claims 64 - 66, dependent on claim 63, are believed allowable therewith.

For the foregoing reasons, it is believed that this application is now in condition for allowance. Favorable action thereon is accordingly courteously requested.

Respectfully,




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I hereby certify that this paper is being deposited this date with the U.S. Postal Service as first class mail addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



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